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STALIN AFFORESTATION PLAN COMPLICATES PEST CONTROL

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In connection with the planting of shelter belts around fields, which was initiated by the 1948 Stalin Transformation-of-Nature Plan, it is necessary to consider the effect this program will have on increasing insect pests and measures for controlling them.

In estimating pest damage inflicted on agricultural crops in regions where tree belts are being planted, one must consider damage by insects first of all.

The so-called grass flea is one of the grass-destroying pests which occurs in great numbers. Damage to fields increases when these fleas make incursions from the shelter belts into the very center of the fields. Damage wrought by the stem flea is considerably less. The grain beetle does great damage in fields located between shelter belts. It is interesting that this pest shows a definite preference for soft and awnless wheats. The elater beetle occurs less frequently than the grass-destroying pests. Damage to shelter-belt-surrounded fields by the grass fly is directly proportional to the field's nearness to the belt.

The chinch bug, cicada, and aphid do much damage. The extensive reproduction of some types of chinch bugs is closely connected with deep snow cover.

Of the cicadas, the grass cicada is especially numerous. In dry years, these insects travel from the center of the fields toward the shelter belts, but in wet years they reverse the procedure.

The root aphid harms millet especially. Infestation is greatest near the shelter belts.

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On the other hand, orthoptera are more numerous on fields at a distance from the shelter belts. The grasshopper is most numerous where the shelter belts do not enter the picture at all. Reduced yields of wheat in the central parts of tree-protected fields can be explained to a considerable degree by the heavier infestation of grasshoppers there. It is interesting to note that some types of grasshoppers eat mostly weeds and have consequently been nicknamed "weed-eaters." The latter cannot be considered pests in the strict sense of the word but are beneficial to crop growth.

Rodents are most numerous towards the center of tree-protected fields and least numerous in the densest tree belts and in the area 10-30 meters fieldward from them.

Birds which damage seeded fields surrounded with shelter belts include the field sparrow, the house sparrow, the yellow bunting, and the turtledove.

It is clear that damage inflicted on shelter-belt protected fields by pests is of a dual nature: damage inflicted along the sides of the fields by mesophytic-type pests (flies, aphids, elater beetles) and damage wrought within the fields by xerophytic-type pests (grasshoppers, fleas, rodents).

In regard to other than field crops which are damaged by pests in tree-surrounded fields, it is worth mentioning that beets are harmed considerably by insects which in their adult stage find refuge during the winter in the shelter belts and under the deep snow cover there. The sunflower suffers mainly from beetle damage; the nearer it grows to the tree belt, the greater the damage. The same rule is true of damage to potatoes by cicadas. Cabbage is damaged most when it grows in the central part of a field. Melons, cucumbers, and squash are harmed considerably by such birds as the crow, magpie, jackdaw, and the rook.

Thus, it appears that the significance of shelter belts for increasing crop yields may be weakened by the depredations of pests. Therefore, a decisive campaign against pests as well as fungus diseases afflicting crops and trees has the very highest priority. Soviet agricultural science has the following effective means for carrying on this struggle against pests.

1. Increasing the number of insectivorous and carnivorous birds and killing off the harmful birds.
2. Catching insects and rodents by mechanical means.
3. Burning the cobweb-like nests of certain insects; burning litter and grass.
4. Using poisoning agents. Different poisoning agents affect the shell, intestines, muscles, and nerve systems. As yet there is no general-purpose poisoning agent for practical use against pests. When spraying or dusting plants with poison, it must be considered that both useful wild and domestic animals are exposed to danger. Where this situation exists, poisons cannot be used. It is interesting that cocks do not suffer ill effects from eating insects poisoned with arsenic. Sulfur compounds, coal tar preparations, and chlorine and fluorine compounds, which are cheaper than arsenic preparations, are common insecticides.
5. Pyrethrum, a powder from daisy petals, has been tested as an insecticide. Its great advantage is that it is harmless to man and domestic animals and does not burn plants.

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6. Spreading carbon dioxide gas in the form of smoke from a plane.
7. Artificially infecting the pests with bacteria. This method has, however, not yet been mastered.

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